

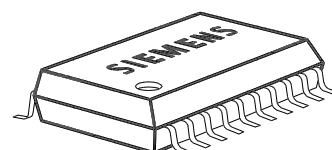
Smart Two Channel Highside Power Switch

Features

- Overload protection
- Current limitation
- Short-circuit protection
- Thermal shutdown
- Overvoltage protection (including load dump)
- Fast demagnetization of inductive loads
- Reverse battery protection¹⁾
- Undervoltage and overvoltage shutdown with auto-restart and hysteresis
- Open drain diagnostic output
- Open load detection in ON-state
- CMOS compatible input
- Loss of ground and loss of V_{bb} protection
- **Electrostatic discharge (ESD)** protection

Product Summary

| | | | |
|------------------------|--------------|------------|--------------|
| Overvoltage Protection | $V_{bb(AZ)}$ | 43 | V |
| Operating voltage | $V_{bb(on)}$ | 5.0 ... 34 | V |
| active channels: | | one | two parallel |
| On-state resistance | R_{ON} | 60 | 30 |
| Nominal load current | $I_{L(NOM)}$ | 4.0 | 6.0 |
| Current limitation | $I_{L(SCr)}$ | 16 | 16 |
| | | | mΩ |
| | | | A |
| | | | A |



Application

- μ C compatible power switch with diagnostic feedback for 12 V and 24 V DC grounded loads
- All types of resistive, inductive and capacitive loads
- Replaces electromechanical relays and discrete circuits

General Description

N channel vertical power FET with charge pump, ground referenced CMOS compatible input and diagnostic feedback, monolithically integrated in Smart SIPMOS® technology. Fully protected by embedded protection functions.

Pin Definitions and Functions

| Pin | Symbol | Function |
|------------------------------------|----------|--|
| 1,10, 11,12, 15,16, 19,20 | V_{bb} | Positive power supply voltage. Design the wiring for the simultaneous max. short circuit currents from channel 1 to 2 and also for low thermal resistance |
| 3 | IN1 | Input 1,2 , activates channel 1,2 in case of logic high signal |
| 7 | IN2 | |
| 17,18 | OUT1 | Output 1,2 , protected high-side power output of channel 1,2. Design the wiring for the max. short circuit current |
| 13,14 | OUT2 | |
| 4 | ST1 | Diagnostic feedback 1,2 of channel 1,2, open drain, low on failure |
| 8 | ST2 | |
| 2 | GND1 | Ground 1 of chip 1 (channel 1) |
| 6 | GND2 | Ground 2 of chip 2 (channel 2) |
| 5,9 | N.C. | Not Connected |

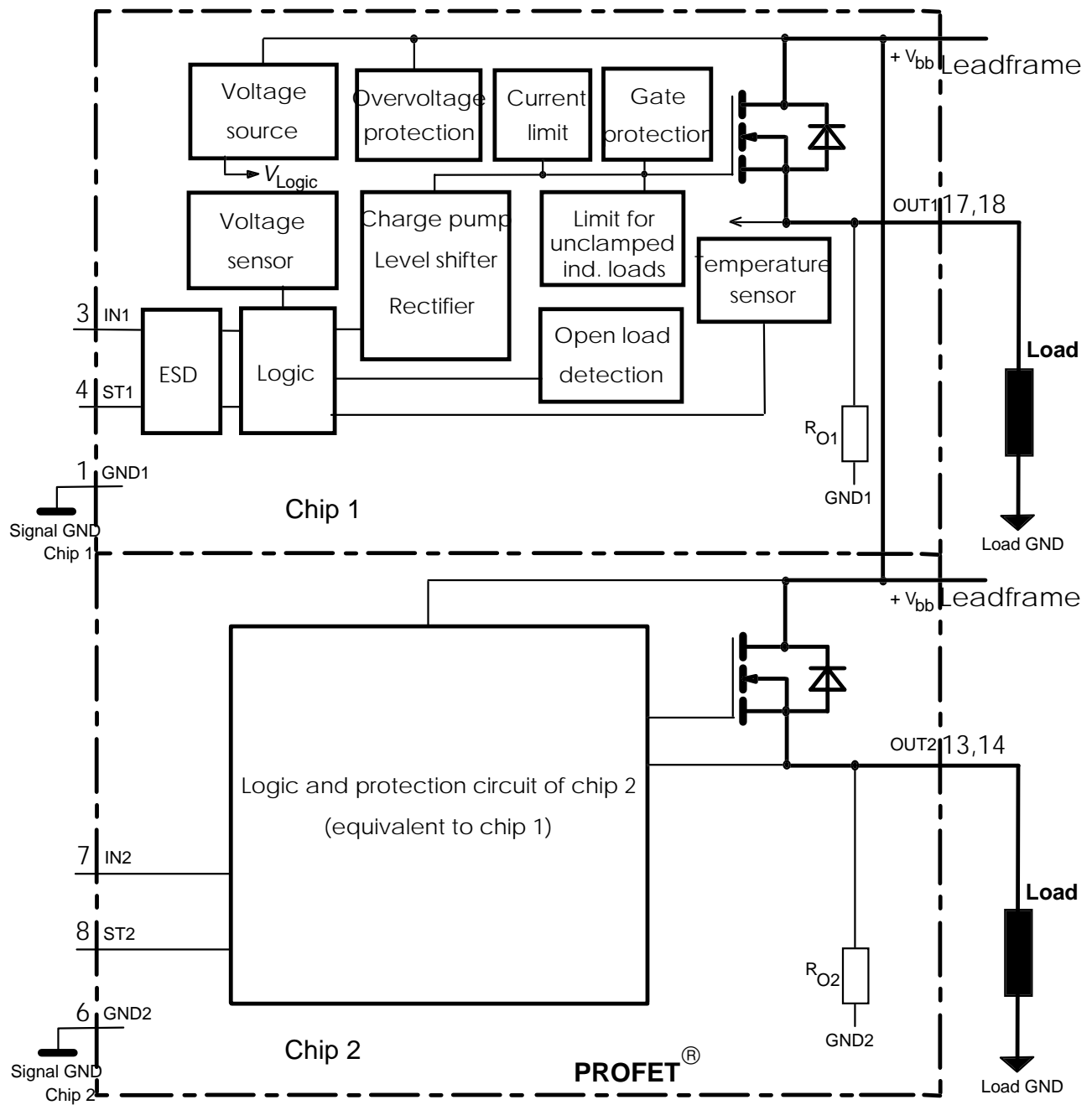
Pin configuration (top view)

| | | | |
|----------|----|----|----------|
| V_{bb} | 1 | 20 | V_{bb} |
| GND1 | 2 | 19 | V_{bb} |
| IN1 | 3 | 18 | OUT1 |
| ST1 | 4 | 17 | OUT1 |
| N.C. | 5 | 16 | V_{bb} |
| GND2 | 6 | 15 | V_{bb} |
| IN2 | 7 | 14 | OUT2 |
| ST2 | 8 | 13 | OUT2 |
| N.C. | 9 | 12 | V_{bb} |
| V_{bb} | 10 | 11 | V_{bb} |

¹⁾ With external current limit (e.g. resistor $R_{GND}=150\ \Omega$) in GND connection, resistor in series with ST connection, reverse load current limited by connected load.

Block diagram

Two Channels; Open Load detection in on state;



Leadframe connected to pin 1, 10, 11, 12, 15, 16, 19, 20

Maximum Ratings at $T_j = 25^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | Values | Unit |
|--|----------|--------|------|
| Supply voltage (overvoltage protection see page 4) | V_{bb} | 43 | V |
| Supply voltage for full short circuit protection $T_{j,start} = -40 \dots +150^\circ\text{C}$ | V_{bb} | 34 | V |

Maximum Ratings at $T_j = 25^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | Values | Unit |
|--|--|--|------------------|
| Load current (Short-circuit current, see page 5) | I_L | self-limited | A |
| Load dump protection ²⁾ $V_{\text{LoadDump}} = U_A + V_s$, $U_A = 13.5\text{ V}$ $R_l^{3)} = 2\ \Omega$, $t_d = 200\text{ ms}$; IN = low or high, each channel loaded with $R_L = 3.4\ \Omega$, | $V_{\text{Load dump}}^{4)}$ | 60 | V |
| Operating temperature range | T_j | -40 ... +150 | $^\circ\text{C}$ |
| Storage temperature range | T_{stg} | -55 ... +150 | $^\circ\text{C}$ |
| Power dissipation (DC) ⁵ (all channels active) | P_{tot} | $T_a = 25^\circ\text{C}$: 3.7 $T_a = 85^\circ\text{C}$: 1.9 | W |
| Inductive load switch-off energy dissipation, single pulse $V_{bb} = 12\text{ V}$, $T_{j,\text{start}} = 150^\circ\text{C}^{5)}$, $I_L = 4.0\text{ A}$, $Z_L = 50\text{ mH}$, $0\ \Omega$ one channel: $I_L = 6.0\text{ A}$, $Z_L = 42\text{ mH}$, $0\ \Omega$ two parallel channels: see diagrams on page 9 and page 10 | E_{AS} | 0.5 1.0 | J |
| Electrostatic discharge capability (ESD) (Human Body Model) | V_{ESD} | 1.0 | kV |
| Input voltage (DC) | V_{IN} | -10 ... +16 | V |
| Current through input pin (DC) | I_{IN} | ± 2.0 | mA |
| Current through status pin (DC) see internal circuit diagram page 8 | I_{ST} | ± 5.0 | |
| Thermal resistance junction - soldering point ^{5),6)} each channel: junction - ambient ⁵⁾ one channel active: all channels active: | R_{thjs} R_{thja} | 12 41 34 | K/W |

2) Supply voltages higher than $V_{bb(\text{AZ})}$ require an external current limit for the GND and status pins, e.g. with a $150\ \Omega$ resistor in the GND connection and a $15\text{ k}\Omega$ resistor in series with the status pin. A resistor for input protection is integrated.

3) R_l = internal resistance of the load dump test pulse generator

4) $V_{\text{Load dump}}$ is setup without the DUT connected to the generator per ISO 7637-1 and DIN 40839

5) Device on $50\text{ mm} \times 50\text{ mm} \times 1.5\text{ mm}$ epoxy PCB FR4 with 6 cm^2 (one layer, $70\ \mu\text{m}$ thick) copper area for V_{bb} connection. PCB is vertical without blown air. See page 15

6) Soldering point: upper side of solder edge of device pin 15. See page 15

Electrical Characteristics

| Parameter and Conditions, each of the two channels at $T_j = 25^\circ\text{C}$, $V_{bb} = 12\text{ V}$ unless otherwise specified | Symbol | Values | | | Unit |
|---|--------|--------|-----|-----|------|
| | | min | typ | max | |

Load Switching Capabilities and Characteristics

| | | | | | |
|---|-----------------------|------------|---------------------|---------------------|------------------|
| On-state resistance (V_{bb} to OUT) $I_L = 2\text{ A}$ each channel, $T_j = 25^\circ\text{C}$: $T_j = 150^\circ\text{C}$: two parallel channels, $T_j = 25^\circ\text{C}$: | R_{ON} | -- | 50 100 25 | 60 120 30 | $\text{m}\Omega$ |
| Nominal load current one channel active: two parallel channels active: Device on PCB ⁵⁾ , $T_a = 85^\circ\text{C}$, $T_j \leq 150^\circ\text{C}$ | $I_{L(NOM)}$ | 3.6 5.5 | 4.0 6.0 | -- | A |
| Output current while GND disconnected or pulled up; $V_{bb} = 30\text{ V}$, $V_{IN} = 0$, see diagram page 9 | $I_{L(GNDhigh)}$ | -- | -- | 10 | mA |
| Turn-on time to 90% V_{OUT} : Turn-off time to 10% V_{OUT} : $R_L = 12\ \Omega$, $T_j = -40\dots+150^\circ\text{C}$ | t_{on} t_{off} | 80 80 | 200 230 | 400 450 | μs |
| Slew rate on 10 to 30% V_{OUT} , $R_L = 12\ \Omega$, $T_j = -40\dots+150^\circ\text{C}$: | dV/dt_{on} | 0.1 | -- | 1 | V/ μs |
| Slew rate off 70 to 40% V_{OUT} , $R_L = 12\ \Omega$, $T_j = -40\dots+150^\circ\text{C}$: | $-dV/dt_{off}$ | 0.1 | -- | 1 | V/ μs |

Operating Parameters

| | | | | | |
|--|------------------------|----------|----------|------------|---------------|
| Operating voltage ⁷⁾ $T_j = -40\dots+150^\circ\text{C}$: | $V_{bb(on)}$ | 5.0 | -- | 34 | V |
| Undervoltage shutdown $T_j = -40\dots+150^\circ\text{C}$: | $V_{bb(under)}$ | 3.5 | -- | 5.0 | V |
| Undervoltage restart $T_j = -40\dots+25^\circ\text{C}$: $T_j = +150^\circ\text{C}$: | $V_{bb(u\ rst)}$ | -- | -- | 5.0 7.0 | V |
| Undervoltage restart of charge pump see diagram page 14 $T_j = -40\dots+150^\circ\text{C}$: | $V_{bb(ucp)}$ | -- | 5.6 | 7.0 | V |
| Undervoltage hysteresis $\Delta V_{bb(under)} = V_{bb(u\ rst)} - V_{bb(under)}$ | $\Delta V_{bb(under)}$ | -- | 0.2 | -- | V |
| Overvoltage shutdown $T_j = -40\dots+150^\circ\text{C}$: | $V_{bb(over)}$ | 34 | -- | 43 | V |
| Overvoltage restart $T_j = -40\dots+150^\circ\text{C}$: | $V_{bb(o\ rst)}$ | 33 | -- | -- | V |
| Overvoltage hysteresis $T_j = -40\dots+150^\circ\text{C}$: | $\Delta V_{bb(over)}$ | -- | 0.5 | -- | V |
| Overvoltage protection ⁸⁾ $T_j = -40\dots+150^\circ\text{C}$: $I_{bb} = 40\text{ mA}$ | $V_{bb(AZ)}$ | 42 | 47 | -- | V |
| Standby current, all channels off $T_j = 25^\circ\text{C}$: $V_{IN} = 0$ $T_j = 150^\circ\text{C}$: | $I_{bb(off)}$ | -- -- | 20 29 | 50 56 | μA |

7) At supply voltage increase up to $V_{bb} = 5.6\text{ V}$ typ without charge pump, $V_{OUT} \approx V_{bb} - 2\text{ V}$

8) see also $V_{ON(CL)}$ in circuit diagram on page 8.

| Parameter and Conditions, each of the two channels at $T_j = 25^\circ\text{C}$, $V_{bb} = 12\text{ V}$ unless otherwise specified | Symbol | Values | | | Unit |
|---|---------------------|----------|------------|----------|---------------|
| | | min | typ | max | |
| Leakage output current (included in $I_{bb(\text{off})}$) $V_{IN} = 0$ | $I_{L(\text{off})}$ | -- | -- | 12 | μA |
| Operating current ⁹⁾ , $V_{IN} = 5\text{V}$, $T_j = -40\dots+150^\circ\text{C}$ $I_{GND} = I_{GND1} + I_{GND2}$, one channel on: two channels on: | I_{GND} | -- -- | 1.8 3.6 | 3.5 7 | mA |

Protection Functions

| | | | | | |
|--|-----------------------------|----------------------------------|----------------|----------------|------------------|
| Initial peak short circuit current limit, (see timing diagrams, page 12) each channel, $T_j = -40^\circ\text{C}$: $T_j = 25^\circ\text{C}$: $T_j = +150^\circ\text{C}$: two parallel channels | $I_{L(\text{SCp})}$ | 21 15 11 | 32 25 17 | 43 35 24 | A |
| | | twice the current of one channel | | | |
| Repetitive short circuit current limit, $T_j = T_{jt}$ each channel two parallel channels (see timing diagrams, page 12) | $I_{L(\text{SCR})}$ | -- -- | 16 16 | -- -- | A |
| Initial short circuit shutdown time $T_{j,\text{start}} = -40^\circ\text{C}$: $T_{j,\text{start}} = 25^\circ\text{C}$: (see page 11 and timing diagrams on page 12) | $t_{\text{off}(\text{SC})}$ | -- -- | 5 4 | -- -- | ms |
| Output clamp (inductive load switch off) ¹⁰⁾ at $V_{\text{ON}(\text{CL})} = V_{bb} - V_{\text{OUT}}$ | $V_{\text{ON}(\text{CL})}$ | -- | 47 | -- | V |
| Thermal overload trip temperature | T_{jt} | 150 | -- | -- | $^\circ\text{C}$ |
| Thermal hysteresis | ΔT_{jt} | -- | 10 | -- | K |

Reverse Battery

| | | | | | |
|--|------------------|----|-----|----|----|
| Reverse battery voltage ¹¹⁾ | $-V_{bb}$ | -- | -- | 32 | V |
| Drain-source diode voltage ($V_{\text{out}} > V_{bb}$) $I_L = -4.0\text{ A}$, $T_j = +150^\circ\text{C}$ | $-V_{\text{ON}}$ | -- | 610 | -- | mV |

⁹⁾ Add I_{ST} , if $I_{ST} > 0$

¹⁰⁾ If channels are connected in parallel, output clamp is usually accomplished by the channel with the lowest $V_{\text{ON}(\text{CL})}$



¹¹⁾ Requires a $150\ \Omega$ resistor in GND connection. The reverse load current through the intrinsic drain-source diode has to be limited by the connected load. Note that the power dissipation is higher compared to normal operating conditions due to the voltage drop across the intrinsic drain-source diode. The temperature protection is not active during reverse current operation! Input and Status currents have to be limited (see max. ratings page 3 and circuit page 8).

| Parameter and Conditions, each of the two channels at $T_j = 25^\circ\text{C}$, $V_{bb} = 12\text{ V}$ unless otherwise specified | Symbol | Values | | | Unit |
|---|--------|--------|-----|-----|------|
| | | min | typ | max | |

Diagnostic Characteristics

| | | | | | |
|--|---------------|----------------------------------|----------------|-------------------|------------|
| Open load detection current, (on-condition) each channel, $T_j = -40^\circ\text{C}$: $T_j = 25^\circ\text{C}$: $T_j = 150^\circ\text{C}$: two parallel channels | $I_{L(OL)}$ | 20 20 20 | -- -- -- | 850 750 750 | mA |
| | | twice the current of one channel | | | |
| Open load detection voltage ¹²⁾ $T_j = -40..+150^\circ\text{C}$: | $V_{OUT(OL)}$ | 2 | 3 | 4 | V |
| Internal output pull down (OUT to GND), $V_{OUT} = 5\text{ V}$ $T_j = -40..+150^\circ\text{C}$: | R_O | 4 | 10 | 30 | k Ω |

Input and Status Feedback¹³⁾

| | | | | | |
|--|---------------------------------|-----------------|-----------------|------------------|---------------|
| Input resistance (see circuit page 8) $T_j = -40..+150^\circ\text{C}$: | R_I | 2.5 | 3.5 | 6 | k Ω |
| Input turn-on threshold voltage  $T_j = -40..+150^\circ\text{C}$: | $V_{IN(T+)}$ | 1.7 | -- | 3.5 | V |
| Input turn-off threshold voltage  $T_j = -40..+150^\circ\text{C}$: | $V_{IN(T-)}$ | 1.5 | -- | -- | V |
| Input threshold hysteresis | $\Delta V_{IN(T)}$ | -- | 0.5 | -- | V |
| Off state input current $V_{IN} = 0.4\text{ V}$: $T_j = -40..+150^\circ\text{C}$: | $I_{IN(off)}$ | 1 | -- | 50 | μA |
| On state input current $V_{IN} = 5\text{ V}$: $T_j = -40..+150^\circ\text{C}$: | $I_{IN(on)}$ | 20 | 50 | 90 | μA |
| Delay time for status with open load after switch off (see timing diagrams, page 13), $T_j = -40..+150^\circ\text{C}$: | $t_{d(ST\ OL4)}$ | 100 | 520 | 1000 | μs |
| Status invalid after positive input slope (open load) $T_j = -40..+150^\circ\text{C}$: | $t_{d(ST)}$ | -- | 250 | 600 | μs |
| Status output (open drain) Zener limit voltage $T_j = -40..+150^\circ\text{C}$, $I_{ST} = +1.6\text{ mA}$: ST low voltage $T_j = -40..+25^\circ\text{C}$, $I_{ST} = +1.6\text{ mA}$: $T_j = +150^\circ\text{C}$, $I_{ST} = +1.6\text{ mA}$: | $V_{ST(high)}$ $V_{ST(low)}$ | 5.4 -- -- | 6.1 -- -- | -- 0.4 0.6 | V |

¹²⁾ External pull up resistor required for open load detection in off state.

¹³⁾ If ground resistors R_{GND} are used, add the voltage drop across these resistors.

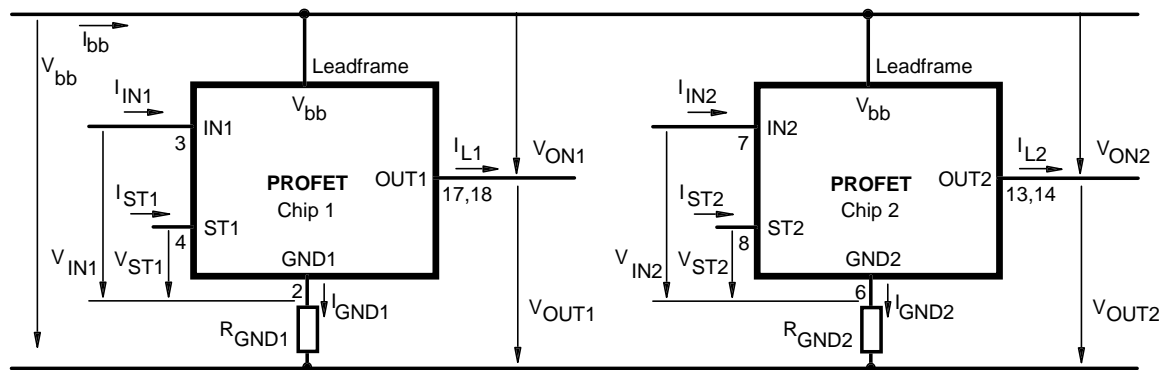
Truth Table

| Channel 1 | Input 1 | Output 1 | Status 1 |
|----------------------------------|---------|----------|----------------------|
| Channel 2 | Input 2 | Output 2 | Status 2 |
| | level | level | BTS 726L1 |
| Normal operation | L | L | H |
| | H | H | H |
| Open load | L | Z | H (L ¹⁴) |
| | H | H | L |
| Short circuit to V _{bb} | L | H | L ¹⁵ |
| | H | H | H (L ¹⁶) |
| Overtemperature | L | L | H |
| | H | L | L |
| Under-voltage | L | L | H |
| | H | L | H |
| Overvoltage | L | L | H |
| | H | L | H |

L = "Low" Level X = don't care Z = high impedance, potential depends on external circuit
H = "High" Level Status signal valid after the time delay shown in the timing diagrams

Parallel switching of channel 1 and 2 is easily possible by connecting the inputs and outputs in parallel. The status outputs ST1 and ST2 have to be configured as a 'Wired OR' function with a single pull-up resistor.

Terms

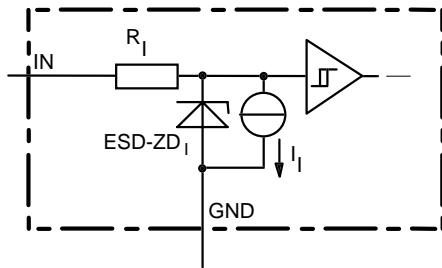


Leadframe (V_{bb}) is connected to pin 1,10,11,12,15,16,19,20

External R_{GND} optional; two resistors R_{GND1}, R_{GND2} = 150 Ω or a single resistor R_{GND} = 75 Ω for reverse battery protection up to the max. operating voltage.

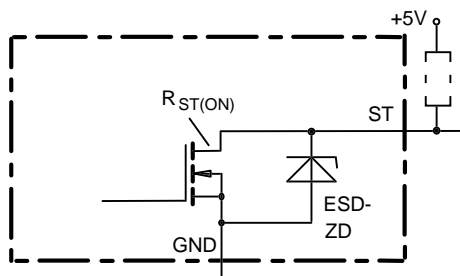
- 14) With external resistor between output and V_{bb}
- 15) An external short of output to V_{bb} in the off state causes an internal current from output to ground. If R_{GND} is used, an offset voltage at the GND and ST pins will occur and the V_{ST low} signal may be erroneous.
- 16) Low resistance to V_{bb} may be detected by no-load-detection

Input circuit (ESD protection), IN1 or IN2



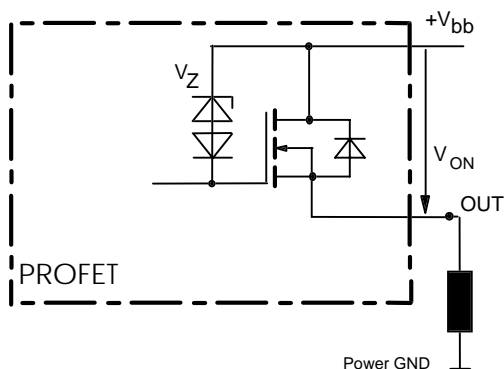
ESD zener diodes are not to be used as voltage clamp at DC conditions. Operation in this mode may result in a drift of the zener voltage (increase of up to 1 V).

Status output, ST1 or ST2



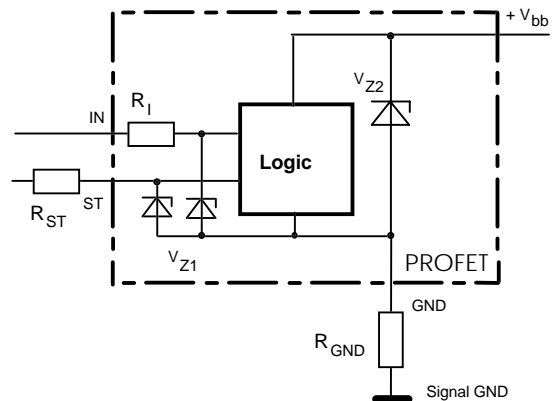
ESD-Zener diode: 6.1 V typ., max 5.0 mA; $R_{ST(ON)} < 380 \Omega$ at 1.6 mA, ESD zener diodes are not to be used as voltage clamp at DC conditions. Operation in this mode may result in a drift of the zener voltage (increase of up to 1 V).

Inductive and overvoltage output clamp, OUT1 or OUT2



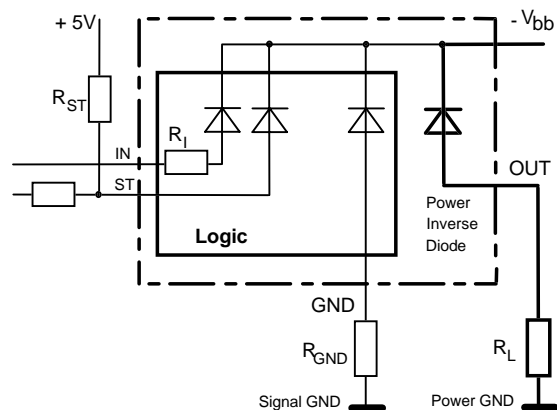
V_{ON} clamped to $V_{ON(CL)} = 47 \text{ V typ.}$

Overvoltage protection of logic part GND1 or GND2



$V_{Z1} = 6.1 \text{ V typ.}$, $V_{Z2} = 47 \text{ V typ.}$, $R_I = 3.5 \text{ k}\Omega \text{ typ.}$, $R_{GND} = 150 \Omega$, $R_{ST} = 15 \text{ k}\Omega \text{ nominal.}$

Reverse battery protection



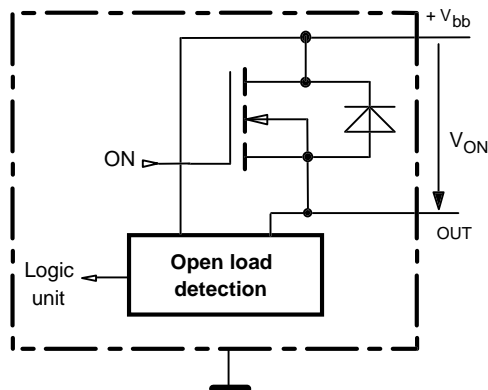
$R_{GND} = 150 \Omega$, $R_I = 3.5 \text{ k}\Omega \text{ typ.}$

Temperature protection is not active during inverse current operation.

Open-load detection, OUT1 or OUT2

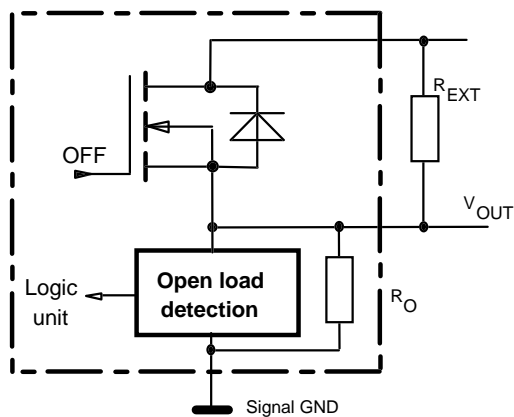
ON-state diagnostic condition:

$$V_{ON} < R_{ON} \cdot I_{L(OL)}; \text{IN high}$$

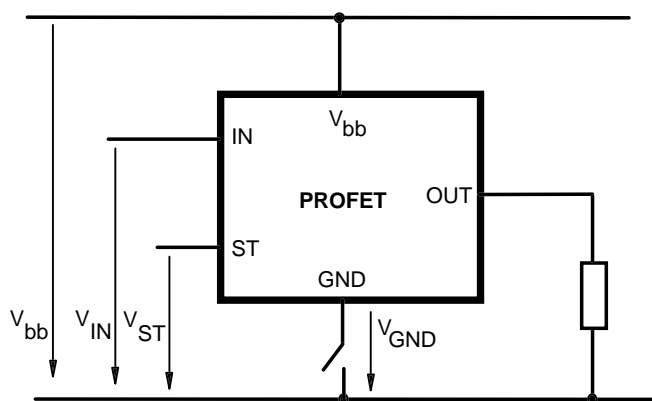


OFF-state diagnostic condition:

$$V_{OUT} > 3 \text{ V typ.}; \text{IN low}$$

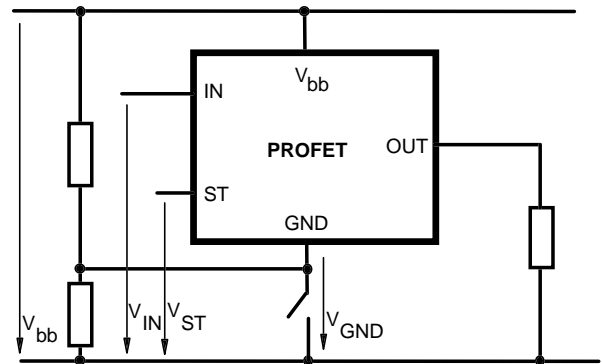


GND disconnect



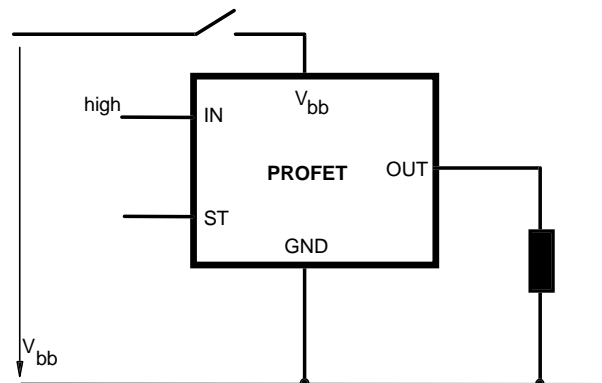
Any kind of load. In case of IN=high is $V_{OUT} \approx V_{IN} - V_{IN(T+)}$.
Due to $V_{GND} > 0$, no $V_{ST} = \text{low}$ signal available.

GND disconnect with GND pull up



Any kind of load. If $V_{GND} > V_{IN} - V_{IN(T+)}$ device stays off
Due to $V_{GND} > 0$, no $V_{ST} = \text{low}$ signal available.

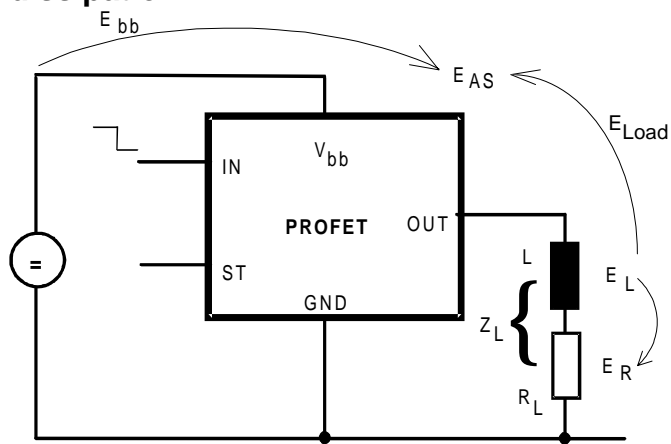
Vbb disconnect with energized inductive load



For an inductive load current up to the limit defined by E_{AS} (max. ratings see page 3 and diagram on page 10) each switch is protected against loss of V_{bb} .

Consider at your PCB layout that in the case of V_{bb} disconnection with energized inductive load the whole load current flows through the GND connection.

Inductive load switch-off energy dissipation



Energy stored in load inductance:

$$E_L = \frac{1}{2} \cdot L \cdot I_L^2$$

While demagnetizing load inductance, the energy dissipated in PROFET is

$$E_{AS} = E_{bb} + E_L - E_R = \int V_{ON(CL)} \cdot i_L(t) dt,$$

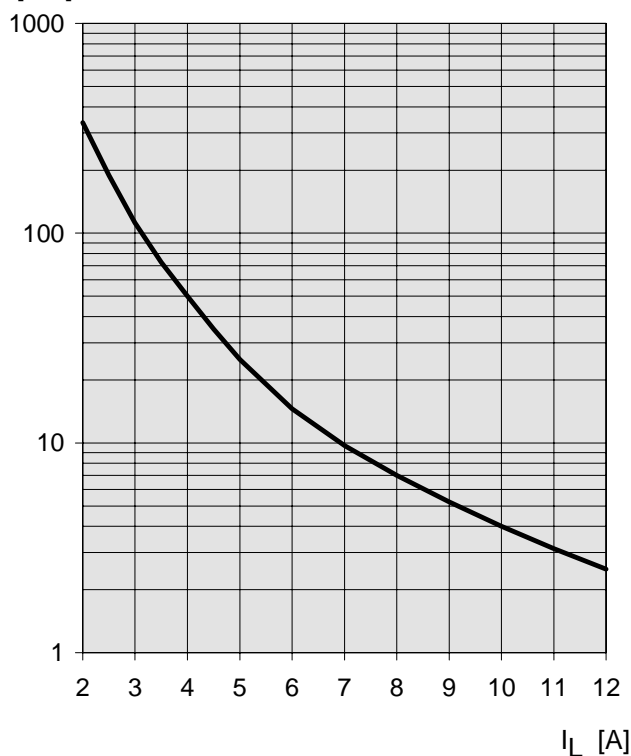
with an approximate solution for $R_L > 0 \Omega$:

$$E_{AS} = \frac{I_L \cdot L}{2 \cdot R_L} (V_{bb} + |V_{OUT(CL)}|) \ln \left(1 + \frac{I_L \cdot R_L}{|V_{OUT(CL)}|} \right)$$

Maximum allowable load inductance for a single switch off (one channel)⁵⁾

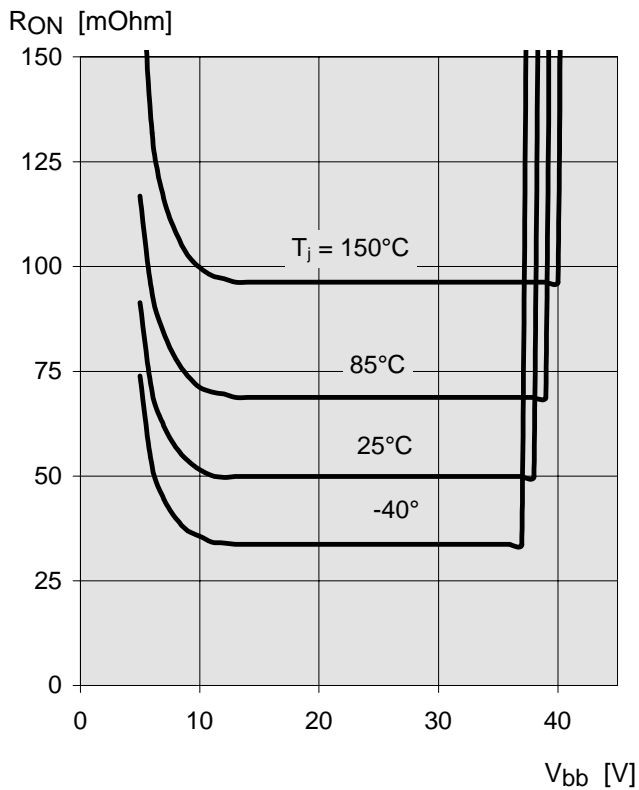
$L = f(I_L)$; $T_{j,start} = 150^\circ\text{C}$, $V_{bb} = 12\text{ V}$, $R_L = 0 \Omega$

L [mH]



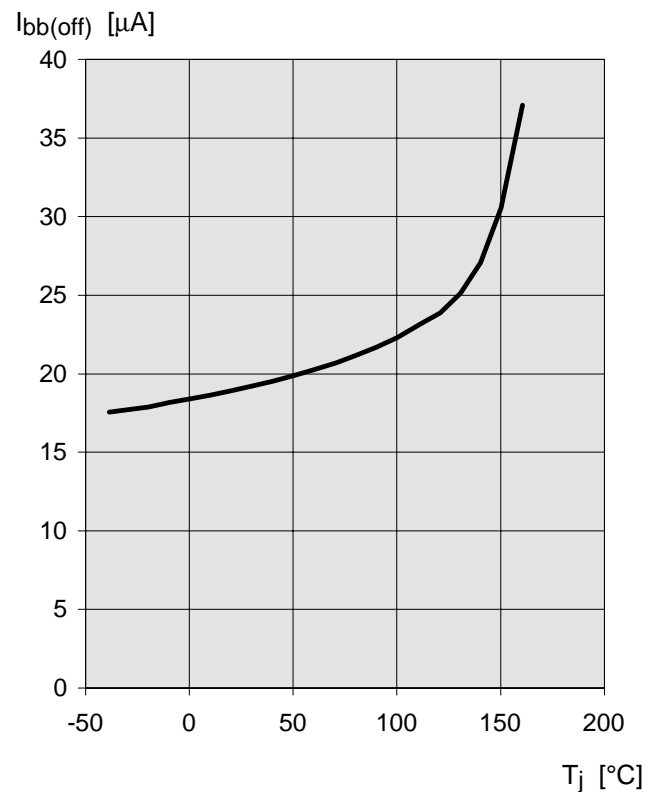
Typ. on-state resistance

$R_{ON} = f(V_{bb}, T_j)$; $I_L = 2\text{ A}$, $I_N = \text{high}$



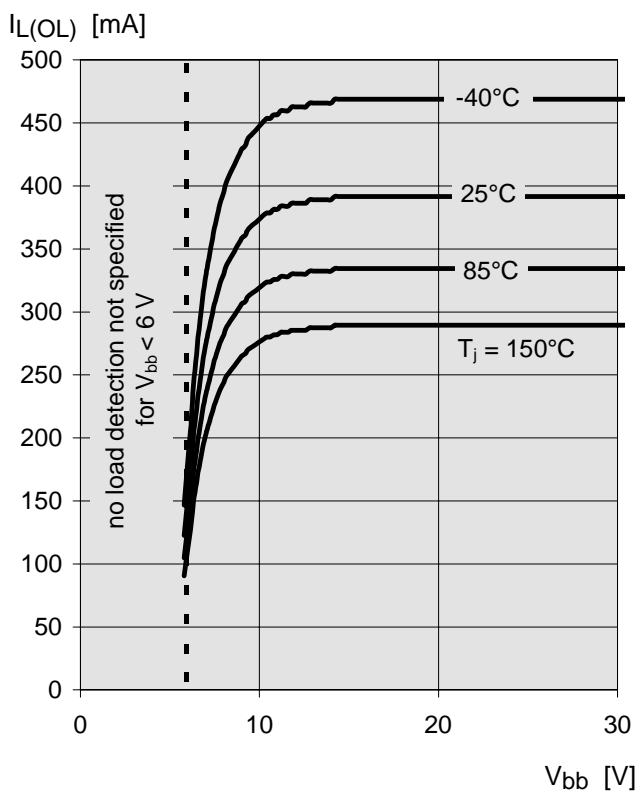
Typ. standby current

$I_{bb(off)} = f(T_j)$; $V_{bb} = 9\text{...}34\text{ V}$, $I_{N1,2} = \text{low}$



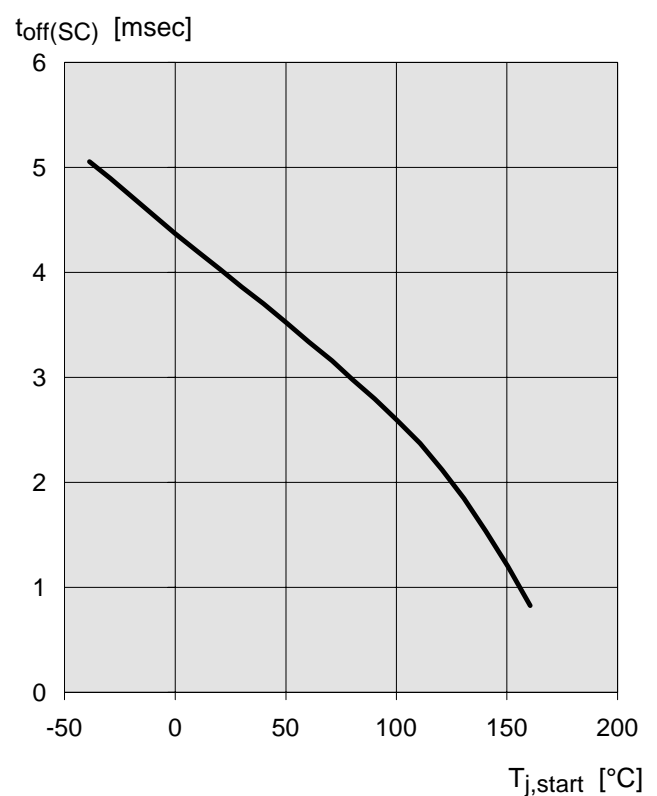
Typ. open load detection current

$I_{L(OL)} = f(V_{bb}, T_j)$; $I_N = \text{high}$



Typ. initial short circuit shutdown time

$t_{off(SC)} = f(T_{j,start})$; $V_{bb} = 12\text{ V}$



Timing diagrams

Both channels are symmetric and consequently the diagrams are valid for channel 1 and channel 2

Figure 1a: V_{bb} turn on:

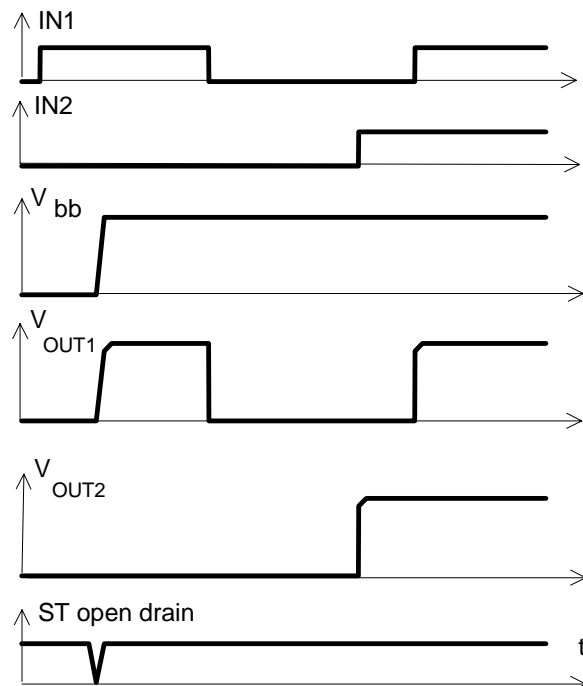
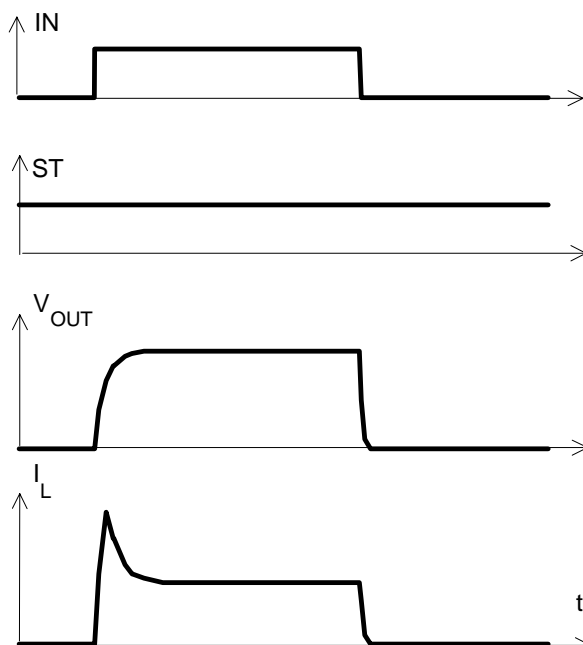
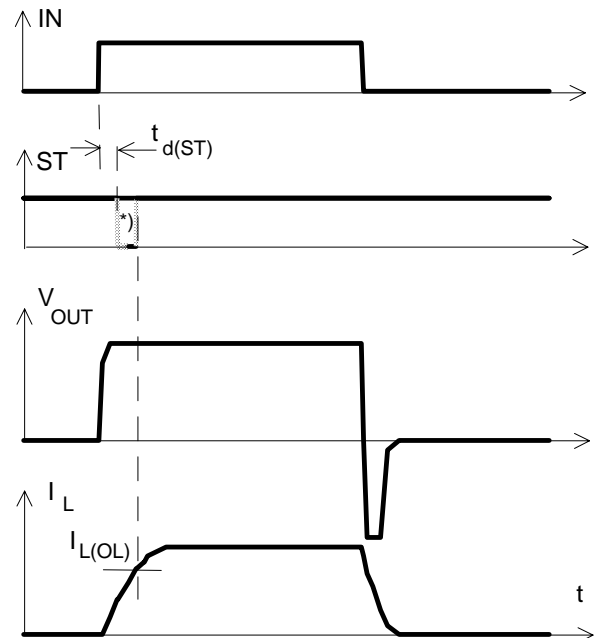


Figure 2a: Switching a lamp:



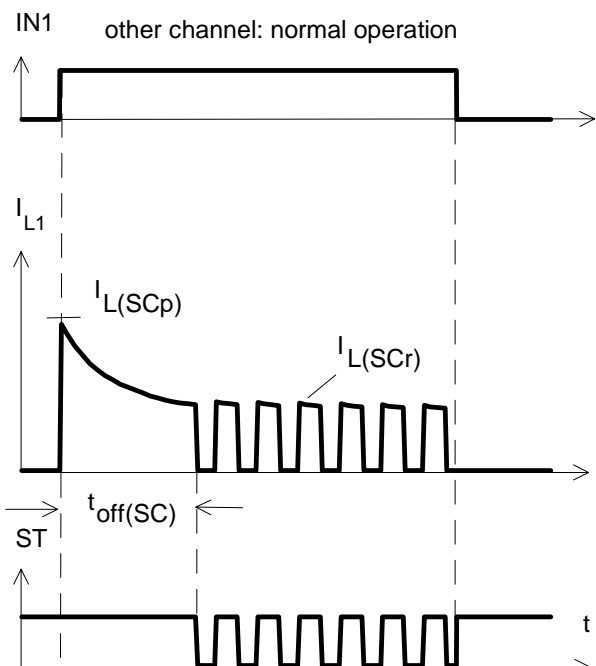
The initial peak current should be limited by the lamp and not by the initial short circuit current $I_{L(SCp)} = 25 \text{ A typ.}$ of the device.

Figure 2b: Switching an inductive load



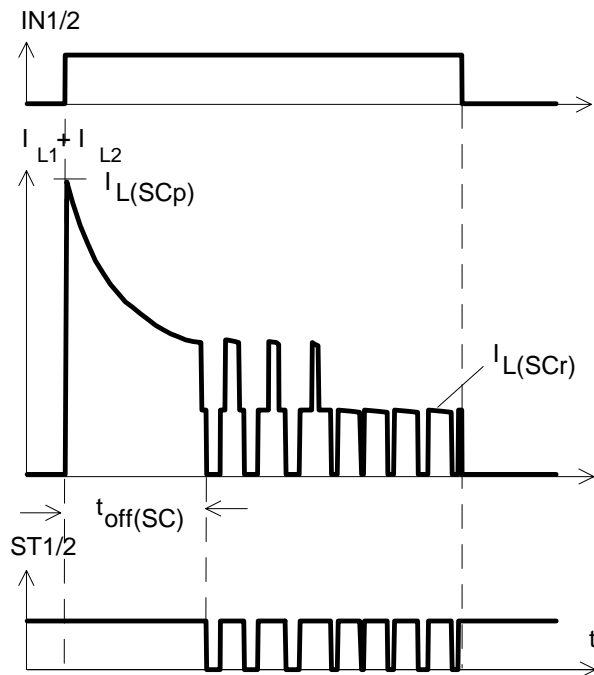
*) if the time constant of load is too large, open-load-status may occur

Figure 3a: Turn on into short circuit:
shut down by overtemperature, restart by cooling



Heating up of the chip may require several milliseconds, depending on external conditions ($t_{off(SC)}$ vs. $T_{j,start}$ see page 11)

Figure 3b: Turn on into short circuit:
shut down by overtemperature, restart by cooling
(two parallel switched channels 1 and 2)



ST1 and ST2 have to be configured as a 'Wired OR' function
ST1/2 with a single pull-up resistor.

Figure 4a: Overtemperature:
Reset if $T_j < T_{jt}$

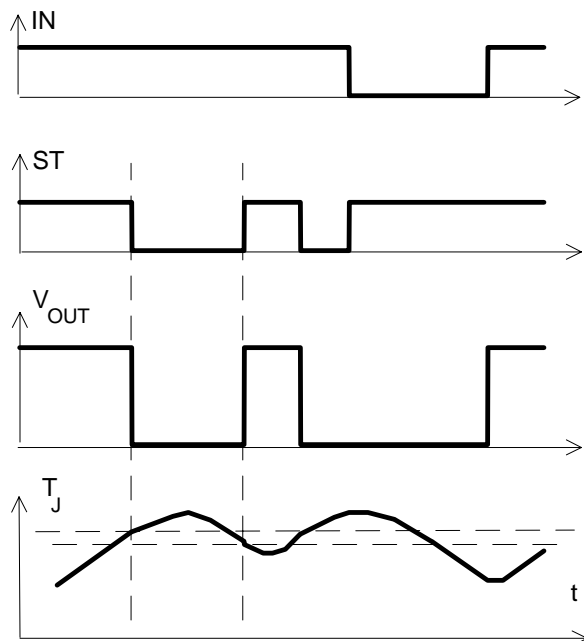
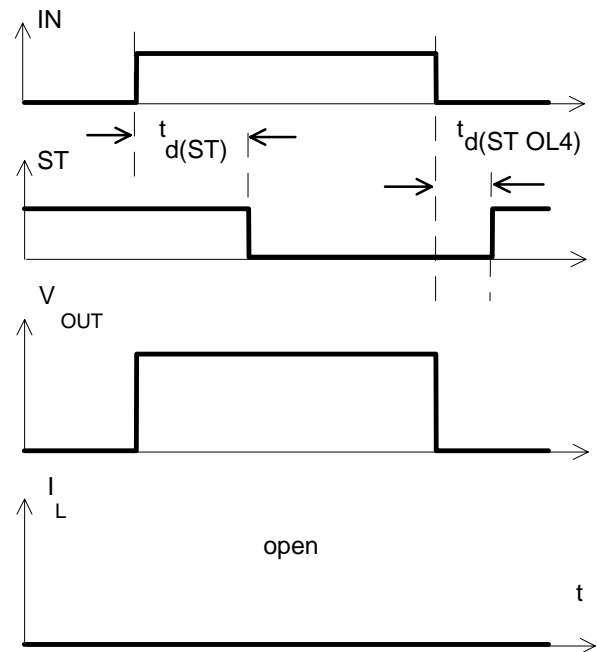
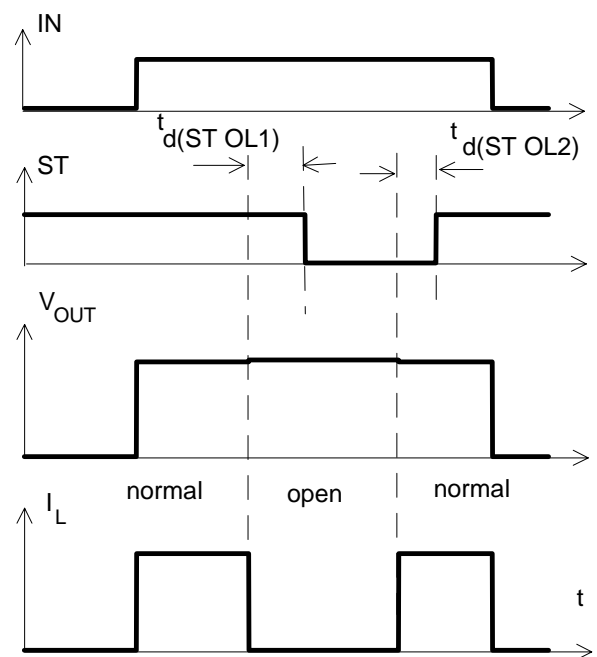


Figure 5a: Open load: detection in ON-state, turn
on/off to open load



The status delay time $t_d(STOL4)$ allows to distinguish between the
failure modes "open load in ON-state" and "overtemperature".

Figure 5b: Open load: detection in ON-state, open
load occurs in on-state



$t_d(ST OL1) = 20 \mu s$ typ., $t_d(ST OL2) = 10 \mu s$ typ

Figure 5c: Open load: detection in ON- and OFF-state (with R_{EXT}), turn on/off to open load

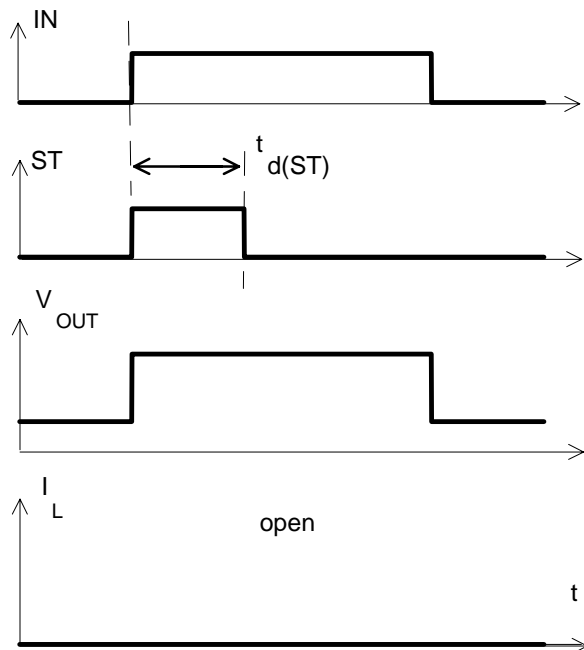


Figure 6a: Undervoltage:

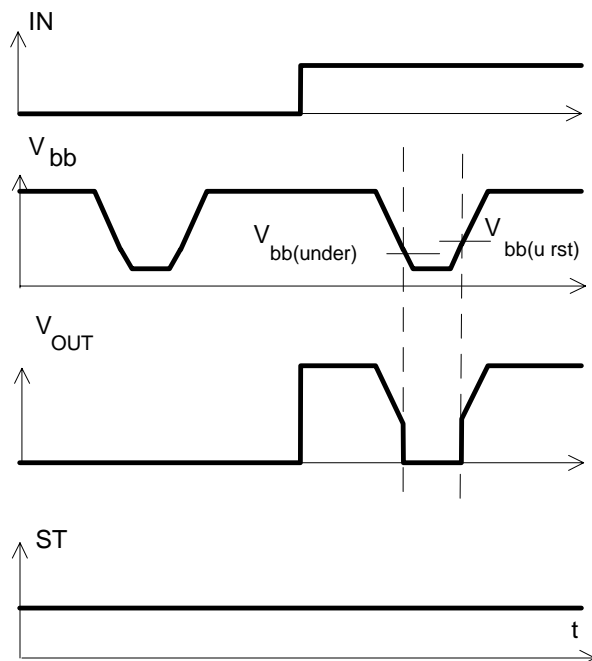
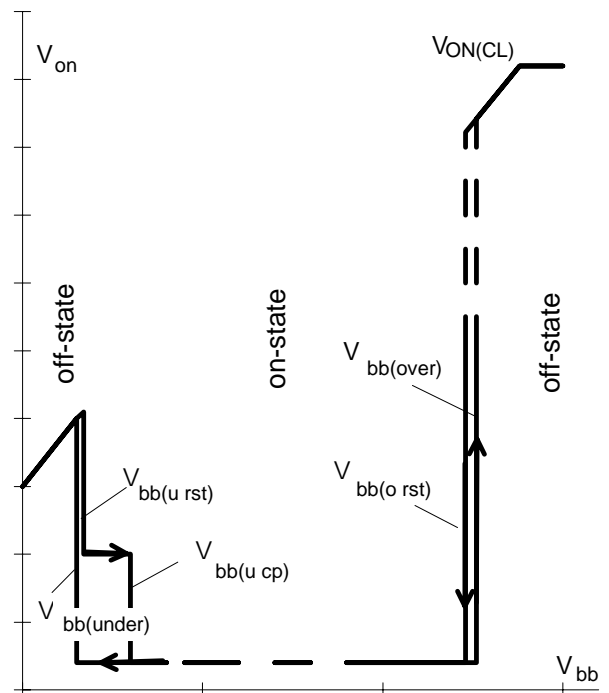
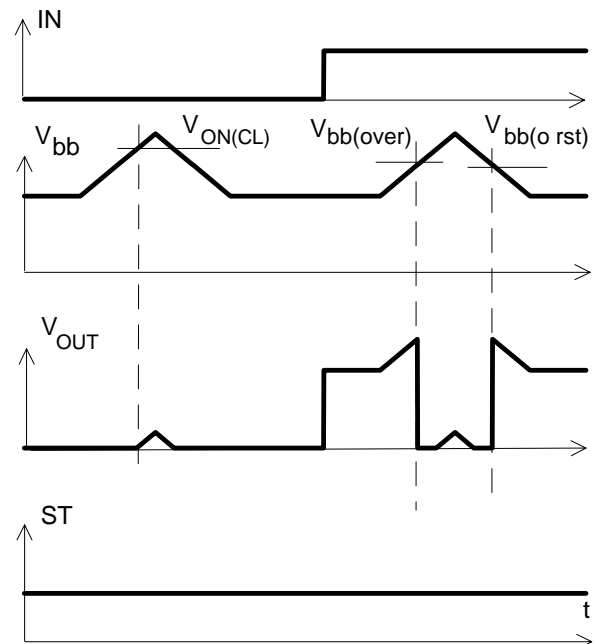


Figure 6b: Undervoltage restart of charge pump



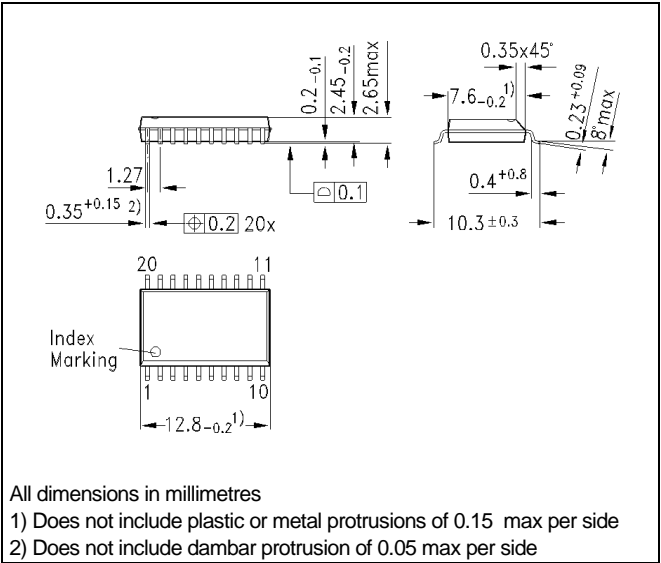
IN = high, normal load conditions.
Charge pump starts at $V_{bb(ucp)} = 5.6 \text{ V typ.}$

Figure 7a: Overvoltage:

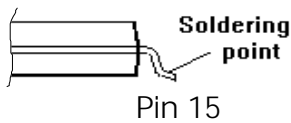


Package and Ordering Code

| | |
|---------------------|-----------------|
| Standard P-DSO-20-9 | Ordering Code |
| BTS726L1 | Q67060-S7003-A2 |



Definition of soldering point with temperature T_s :
upper side of solder edge of device pin 15.



Printed circuit board (FR4, 1.5mm thick, one layer
70 μ m, 6cm² active heatsink area) as a reference for
max. power dissipation P_{tot} , nominal load current
 $I_{L(NOM)}$ and thermal resistance R_{thja}

